

## **ASTER DATA PRODUCTS AND SCIENCE APPLICATIONS**

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ASTER will provide high spatial resolution (15- to 90-m) multispectral images of the Earth's surface and clouds. While the Moderate Resolution Imaging Spectroradiometer (MODIS) and Multiangle Imaging Spectroradiometer (MISR) will monitor many of the same variables globally and on a daily basis, ASTER will provide data at a scale that can be directly related to detailed physical processes. These data will bridge the gap between field observations and data acquired by MODIS and MISR, and between process models and climate and/or forecast models. ASTER data will also be used for long-term monitoring of local and regional changes on the Earth's surface, which either lead to, or are in response to, global climate change, e.g., land use, deforestation, desertification, lake and playa water level changes, and other changes in vegetation communities, glacial movement, and volcanic processes.

Standard data products that will be available in both Japan and the US immediately following the initial checkout period will include calibrated registered radiance at the sensor, relative surface radiance and surface brightness temperature using a decorrelation stretch, absolute surface radiance, reflectance and emissivity, and surface kinetic temperature. In the US, absolute Digital Elevation Models (DEMs) will be produced at the rate of about one scene per day while in Japan many relative DEMs per day will be produced, along with orthophotos. One postlaunch product currently planned is a polar, cloud/ice/snow mapping routine.

ASTER data products will exploit combinations of VNIR, SWIR, and TIR for cloud studies, surface mapping, soil and geologic studies, volcano monitoring, and studies of land use and land cover change. VNIR and SWIR bands will be used for investigation of and vegetation; VNIR and TIR combinations for the study of coral reefs and VNIR for evapotranspiration, and land and ocean temperature. The stereoscopic capability will yield local surface DEMs and also allow observations of cloud structure and volcanic plumes.

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